



# How Do College Graduates' Earnings Change over Time?

## Implications for Higher Education Accountability Policy

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*November 2024*

Recent higher education accountability policies and proposals have often linked programs' or institutions' federal aid access to students' postcompletion earnings.<sup>1</sup> But proposals differ regarding when to measure earnings. Earnings measured too early after students leave school might not be representative of a credential's true value because it can take time for graduates to establish themselves in the labor market. But waiting too long to measure earnings could allow poor-performing programs to continue operating for several years while producing inadequate outcomes (Matsudaira and Turner 2020). Measuring earnings later might also obscure financial struggles graduates endure in their initial working years if their earnings are particularly low. Additionally, student loan borrowers are increasingly using income-driven repayment plans,<sup>2</sup> which leads to closer links between postcompletion earnings and loan repayment outcomes over multiple decades. For these reasons, it is important to understand how earnings change over time for students who earn different credentials.

We now have program-level earnings data from the College Scorecard up to five years after graduation, which allows us to observe earnings later than previously possible with this dataset. Although fifth-year earnings are a helpful addition to these data, policymakers should understand how earnings change in individuals' careers beyond the fifth year, particularly with the expansion of income-driven repayment for student loans, which has up to a 25-year timeline. Policymakers may want to know how fast earnings typically grow, how long before growth slows, and when earnings might stop growing. American Community Survey (ACS) data can offer more insight into graduates' earnings beyond the fifth year. ACS data might be less reliable than Scorecard data in early years after graduation because I cannot observe the precise year of earnings and must estimate based on age. But for years after the fifth, ACS data provide valuable context for how earnings change over time for graduates.

In this brief, I examine average earnings trajectories for the first 5 years after graduation using program-level earnings data in the College Scorecard and for 25 years in the ACS. I find earnings growth

is typically high during the initial years after graduation, particularly for bachelor's and professional degrees, for which growth nears or exceeds 10 percent annually, in real terms, during the first 5 years. But ACS data suggest this growth slows considerably between years 6 and 10, except among professional degree graduates, whose earnings continue to grow rapidly through the first 10 years. On average, master's degree holders appear to have the most consistent earnings growth of the credentials in this analysis; earnings grow no more than 6 percent annually in each of the first 25 years after graduation. These findings suggest that the effects of an accountability policy that measures earnings after graduation can be sensitive to which year is chosen, particularly for bachelor's and professional degrees.

## Undergraduate Degree Earnings Trajectories

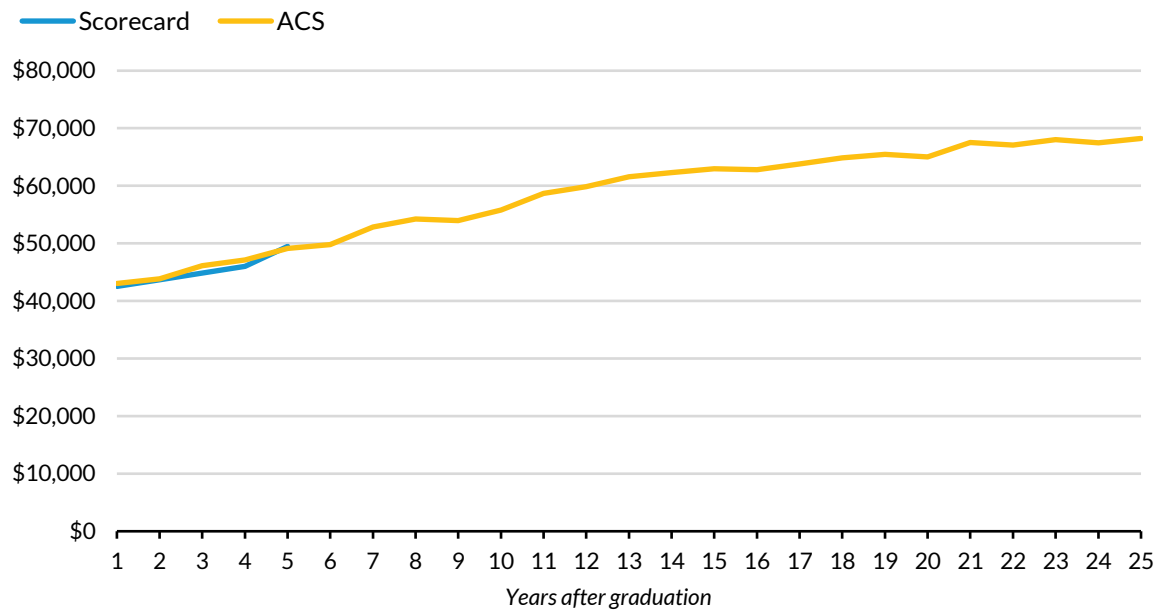
I compare average earnings in both the College Scorecard and the ACS for the first 5 years after graduation and then extend the analysis in the ACS for the following 20 years. These earnings represent a snapshot of individuals of different ages rather than earnings over time for a single cohort. Earnings trajectories can differ over time for different cohorts, so these trajectories might not necessarily represent what future cohorts will experience (Blagg 2022). For undergraduates, I look at associate's and bachelor's degree earners. I do not analyze earnings for certificate earners because the ACS does not have a precise measure for certificate completion. College Scorecard earnings are reported as program-level medians for graduates who received federal financial aid and are working and are not enrolled in school.<sup>3</sup> I use the average earnings of these program-level medians within a credential level. ACS earnings are reported at the individual level. I use individual-level means within each level of educational attainment for those who are working and not enrolled. See the appendix for more details on data and methods.

Earnings for associate's degree holders appear to grow fastest in the early years after graduation and grow at a slower rate for several years after that. The average first-year earnings for associate's degree earners in the College Scorecard data are \$43,000, the same as in the ACS data (figure 1). According to Scorecard data, earnings grow between 3 and 8 percent annually during the first five years after completion, leading to earnings of \$49,000 in year 5. Earnings growth in the ACS data during these early years might differ slightly because of my age assumption using these data,<sup>4</sup> but growth is still higher than in later years. ACS data show that after the fifth year, earnings grow somewhat slower, averaging 3 percent annually, until they start to level off after reaching \$62,000 in year 13. Earnings remain relatively flat toward the end of the 25-year period, reaching a peak of \$68,000 in year 25.

FIGURE 1

### Earnings for Associate's Degree Holders, by Year after Completion

*Earnings growth is faster in early years after graduation and slows in later years*



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**Source:** Urban Institute analysis of College Scorecard and ACS data.

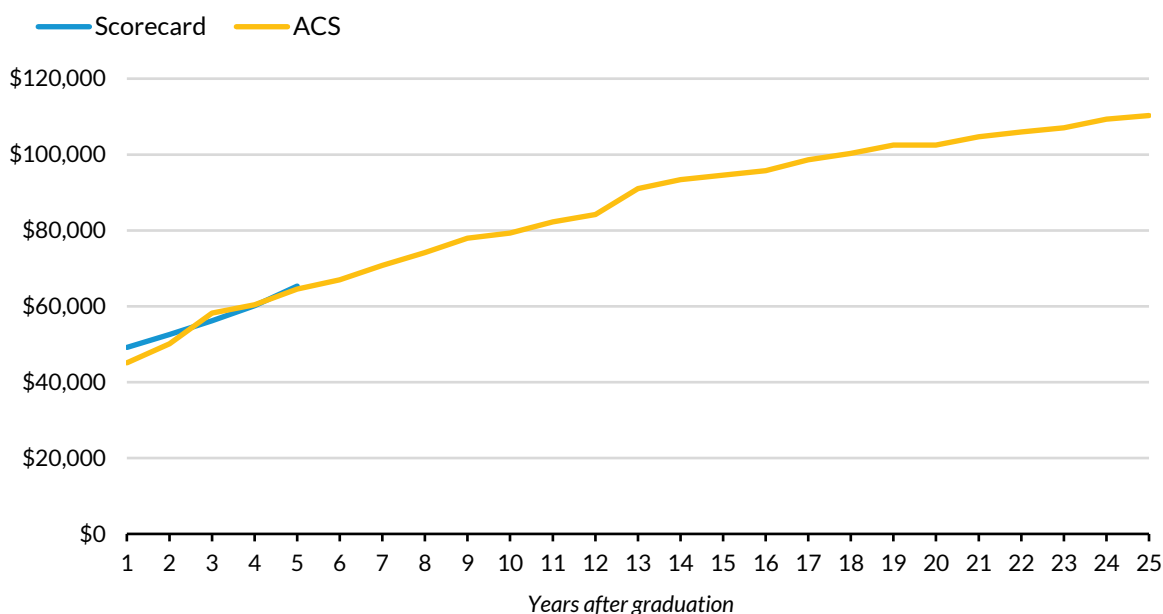
**Notes:** ACS = American Community Survey. Earnings are in 2022 dollars.

For bachelor's degree holders, earnings growth in the early years after graduation is higher than for associate's degree holders. The average first-year earnings for bachelor's degree earners in the College Scorecard are \$49,000, compared with \$45,000 in the ACS (figure 2). But both data sources show high earnings growth in the early years. According to the College Scorecard, this growth is 7 to 9 percent annually through year 5.<sup>5</sup> ACS data show that although growth slows, earnings continue to grow between 2 and 8 percent annually until year 13, when earnings reach \$91,000. Earnings grow between 0 and 3 percent annually for the remaining years and reach \$110,000 by year 25. The high earnings growth in early years suggests that the effects of an accountability policy based on earnings might be particularly sensitive to which year is chosen for measurement.

FIGURE 2

### Earnings for Bachelor's Degree Holders, by Year after Completion

*Earnings grow rapidly in early years after graduation*



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Source: Urban Institute analysis of College Scorecard and ACS data.

Notes: ACS = American Community Survey. Earnings are in 2022 dollars.

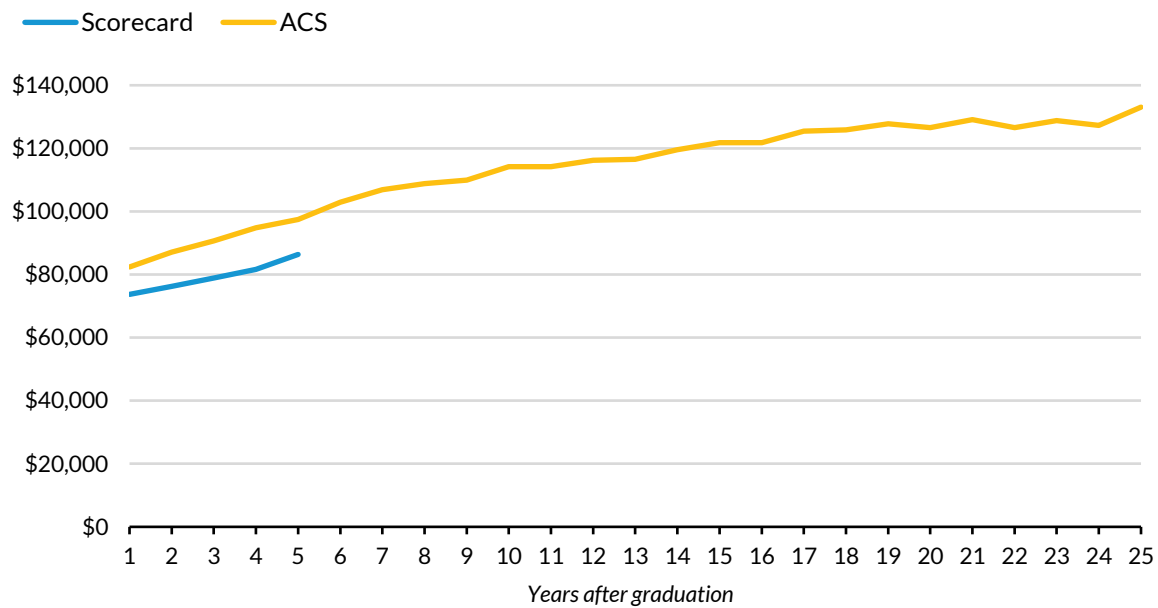
## Graduate Degree Earnings Trajectories

Earnings for master's degree holders appear to be more stable in the early years after graduation than for undergraduate degree holders. For this reason, an accountability policy tied to earnings might be less sensitive to the measurement year in the case of master's degrees. The average first-year earnings for master's degree earners in the College Scorecard are \$74,000, compared with \$82,000 in the ACS (figure 3). The difference in absolute earnings between the two datasets might be caused by the age assumptions I make in the ACS analysis and the wide distribution of ages at which individuals complete master's degrees. But Scorecard and ACS data both show slower earnings growth for these graduates in early-career years than for bachelor's degree students. Annual growth is between 3 and 6 percent in the College Scorecard through year 5. ACS data show 6 percent earnings growth in year 6, when earnings reach \$103,000. Growth between years 7 and 25 averages just 1 percent annually. By year 25, master's degree earnings reach \$133,000.

FIGURE 3

**Earnings for Master's Degree Holders, by Year after Completion**

*Earnings growth is steady but slightly faster in early years after graduation*



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**Source:** Urban Institute analysis of College Scorecard and ACS data.

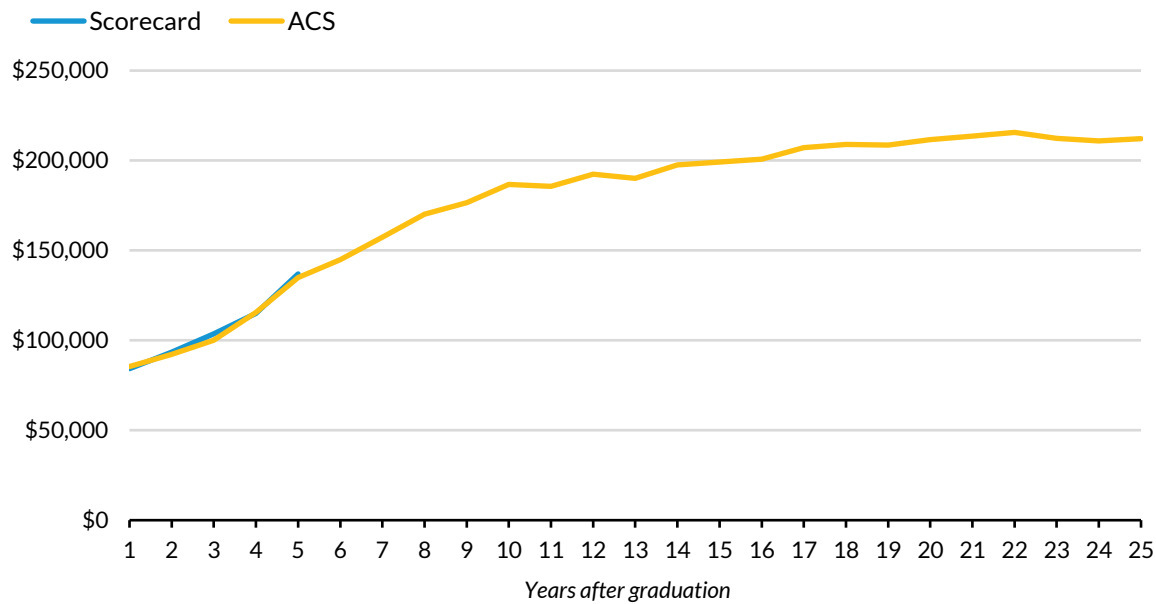
**Notes:** ACS = American Community Survey. Earnings are in 2022 dollars.

The average first-year earnings for professional degree earners (mostly programs in law, medicine, pharmacy, and dentistry) in the College Scorecard are \$84,000, compared with \$85,000 in the ACS (figure 4). Scorecard and ACS data both show earnings grow at high rates in early years for these degrees, between 11 and 19 percent annually in the Scorecard and between 8 and 17 percent annually in the ACS. Many professional degrees require a period of residency or other supervised work with lower earnings before substantial earnings growth. These requirements are reflected in the data. Unlike other credentials in this analysis, ACS data show earnings continue to grow quickly through year 10 for professional degree holders. Earnings reach \$187,000 in year 10. After year 10, growth slows substantially, and earnings eventually peak at \$216,000 in year 22.

FIGURE 4

### Earnings for Professional Degree Holders, by Year after Completion

*Earnings grow rapidly for several years after graduation*



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Source: Urban Institute analysis of College Scorecard and ACS data.

Notes: ACS = American Community Survey. Earnings are in 2022 dollars.

## What Happens When Earnings Are Measured Too Early?

This analysis has shown that earnings in later years typically have a steady, low growth rate, often around 3 percent in real terms.<sup>6</sup> But assuming this same earnings growth rate over the full course of a career can mean very different things for policy depending on when earnings are measured. If an accountability policy measures earnings one year after completion under the assumption that earnings growth is steady, it can substantially underestimate a credential's value. For example, bachelor's degree holders in the College Scorecard earn an average of \$49,000 one year after completion. If we assume a 3 percent annual growth rate after that year, earnings would be just \$55,000 in year 5. But the College Scorecard and ACS both show the actual average fifth-year earnings for bachelor's degree holders are \$65,000 (figure 5). If we carry that assumption based on first-year earnings even further, we would estimate year 10 earnings to be \$64,000. But ACS data suggest this number should be \$79,000.

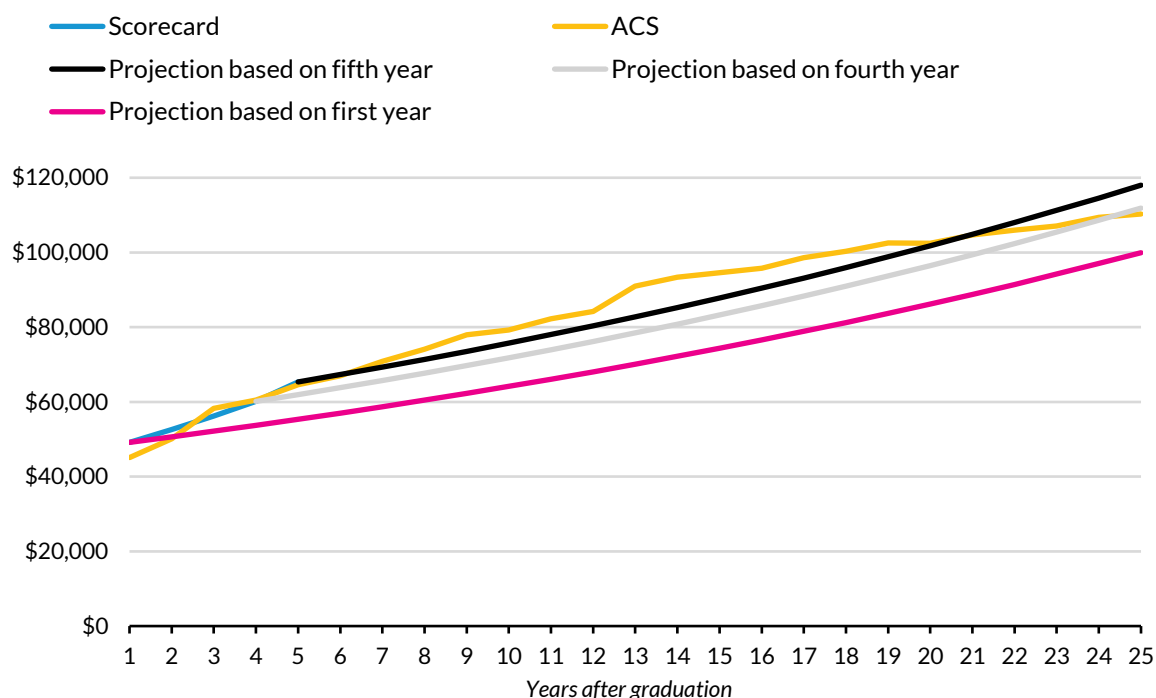
Assuming a 3 percent annual growth rate after measuring earnings in the fifth year after graduation shows a trajectory that is more similar to what we observe in ACS data. In year 10, the earnings estimate would be \$76,000, slightly lower than the ACS estimate. The estimate in year 20 would be within \$700 of what we observe in ACS data, when an estimate based on first-year earnings would be \$16,000 lower. Because earnings grow by 7 percent in the ACS between years 4 and 5, projecting a

trajectory based on fourth-year earnings results in lower earnings estimates than the fifth-year projection but shows a more similar trajectory to the ACS than the first-year projection.

**FIGURE 5**

### Projected Scorecard Earnings for Bachelor's Degree Holders Relative to ACS Earnings, by Year after Completion

*Earnings projections based on the first year after graduation can lead to substantial underestimates*



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**Source:** Urban Institute analysis of College Scorecard and ACS data.

**Notes:** ACS = American Community Survey. Earnings are in 2022 dollars.

## Discussion and Policy Implications

For all credential levels, I find earnings growth is faster in the early years after graduation than in later years, but the difference is largest—and the early growth is most rapid—for bachelor's and professional degree holders.<sup>7</sup> Earnings growth for master's degree holders appears to be the most stable of all credentials.

These findings suggest that the effects of an accountability policy that measures earnings after graduation can be sensitive to which year is chosen, and this sensitivity is most prominent for bachelor's and professional degree programs. Associate's, bachelor's, and master's degree holders see relatively steady earnings growth in later years, but professional degree holders continue to see rapid growth for

10 years, suggesting that the effects of a policy could vary dramatically for professional degrees depending on which of the first 10 years is chosen for measurement.

Rapid earnings growth in the initial years after graduation also has implications for student loan policy. As access to income-driven repayment has increased, more borrowers are likely to use an income-based plan. The typical borrower, if using income-driven repayment, would see their monthly payments increase substantially in the first few years after starting repayment as they experience these rapid earnings increases. This growth in payments could cause many borrowers to enroll in a fixed payment plan after a few years of making payments based on income. Professional degree holders, who often have large debts, would see these increases to an even larger extent, which has implications for the treatment of interest in income-driven repayment (Delisle and Cohn 2024).

One caveat of this analysis is that it is particularly high level. I observe averages and not full distributions of earnings. I also do not look at differences by field of study, but field of study would likely influence earnings trajectory. Further, I do not disaggregate data by race, ethnicity, or gender. Results could look different for different racial, ethnic, and gender groups, which would have implications for policy. For example, evidence suggests earnings continue to grow later in life for men than for women.<sup>8</sup>

Because College Scorecard data have inconsistent earnings measures, I impute second- and third-year earnings. Having second- and third-year earnings variables that align with the first, fourth, and fifth years would help provide a more complete picture of earnings growth in the early years after completing a credential.

## Appendix. Data and Methods

College Scorecard data now measure median earnings at the program level up to five years after completion. I use first-, fourth-, and fifth-year earnings in this analysis because these three variables are consistently measured. The data include students who received federal aid, completed their program, are working, and are not enrolled in school. Because these variables are at the program level, some students might be included in more than one program if they completed credentials in more than one four-digit CIP (Classification of Instructional Programs) code category (US Department of Education 2024). Double-counting these students could bias aggregate estimates if those who complete multiple credentials in different fields at the same level have different postcompletion earnings than those who complete in only one field of study. To aggregate programs within a credential level, I calculate the mean of program-level medians, weighted by the number of individuals counted in the earnings measurements. I cannot use second- and third-year earnings because the second-year variable excludes individuals who went on to earn a higher credential and the third-year variable includes nonworking individuals, both of which are not true of the earnings variables I use. I estimate second- and third-year earnings by assuming a constant annual growth rate between years one and four. The College Scorecard measures first-year earnings in 2020 and 2021 for the 2018–19 and 2019–20 pooled cohort, fourth-year earnings in 2019 and 2020 for the 2014–15 and 2015–16 pooled cohort, and fifth-year earnings in



2020 and 2021 for the 2014–15 and 2015–16 pooled cohort. I report all earnings in 2022 dollars. I include only programs with earnings data for all years.

The ACS provides data on earnings and educational attainment for a representative sample of Americans. Although these data are not linked to colleges or programs, they allow us to observe earnings later in individuals' careers than College Scorecard data. I cannot observe the precise number of years since an individual completed their credential, so I create a rough estimate using age. I assign the year of earnings based on typical ages to complete each credential. This age is 24 for those who completed an associate's degree, 22 for those who completed a bachelor's degree, 29 for those who completed a master's degree, and 27 for those who completed a professional degree.<sup>9</sup> I use 2022 five-year estimates for this analysis. I calculate average earnings within each educational attainment category.<sup>10</sup> I exclude certificate earners from the analysis because the ACS does not have a precise attainment measure for certificates. I include only individuals who are working, are not enrolled in school, and earned at least \$12,950, the point at which individuals are required to file taxes.

ACS data can also provide a point of comparison with Scorecard data in early years because the College Scorecard does not report earnings for small programs. The College Scorecard includes first-, fourth-, and fifth-year earnings for 15 percent of programs. These programs represent 60 percent of students who completed a credential. If smaller programs subject to privacy suppression are in fields of study with systematically different earnings trajectories, the exclusion of these programs can bias credential-level estimates.

In figure 5, I compare the ACS earnings trajectory for bachelor's degree holders with three different trajectories based on Scorecard data. One trajectory assumes a 3 percent annual growth rate beyond first-year earnings, one assumes a 3 percent annual growth rate beyond fourth-year earnings, and one assumes a 3 percent annual growth rate beyond fifth-year earnings. I choose 3 percent because it is typical of earnings growth for bachelor's degree recipients between years 6 and 25 in the ACS.

# Notes

- <sup>1</sup> [Financial Value Transparency and Gainful Employment](#), 88 Fed. Reg. 70004 (Oct. 10, 2023); and [Streamlining Accountability and Value in Education for Students Act](#), S.1971, 118th Cong. (2023).
- <sup>2</sup> “Federal Student Loan Portfolio,” US Department of Education, Office of Federal Student Aid, accessed October 29, 2024, <https://studentaid.gov/data-center/student/portfolio>.
- <sup>3</sup> Because the College Scorecard excludes students who did not receive federal aid, estimates can be biased if earnings for students who receive federal aid are systematically different from earnings for students who did not receive aid. Evidence suggests early-career earnings for undergraduates who receive federal aid are lower, on average, than for those who do not receive federal aid. See National Center for Education Statistics, PowerStats [table sepgys](#).
- <sup>4</sup> Because ACS data do not allow me to observe precise years of earnings, I estimate the year based on age. For example, the median age to complete an associate’s degree is 24, so I assume a 26-year-old with an associate’s degree is in their second year of earnings.
- <sup>5</sup> College Scorecard data include graduates who may have gone on to earn a higher degree by year five. I do not include these individuals in the ACS, but the effect of this exclusion on the overall averages is negligible.
- <sup>6</sup> For bachelor’s degree holders, earnings growth rates average 3 percent annually between years 6 and 25 in the ACS.
- <sup>7</sup> These findings are consistent with analysis of Post-Secondary Employment Outcomes data in the College Scorecard Technical Documentation (US Department of Education 2024).
- <sup>8</sup> Kathleen Elkins, “Here’s the Age at Which You’ll Earn the Most in Your Career,” CNBC, November 2, 2018, <https://www.cnbc.com/2018/11/02/the-age-at-which-youll-earn-the-most-money-in-your-career.html>.
- <sup>9</sup> I use these ages because they align with the median age to complete each credential in the 2020 National Postsecondary Student Aid Study. See National Center for Education Statistics, PowerStats tables [objrzz](#) and [lmnpyz](#).
- <sup>10</sup> Using mean earnings rather than medians can produce estimates that are inflated relative to typical earnings because earnings distributions tend to be skewed right. In this case, ACS earnings medians are less than means but show the same earnings growth trends.

# References

- Blagg, Kristin. 2022. “[Have Earnings for Graduate Degree Recipients Changed? Using Multiple Datasets to Describe Typical Graduate Degree Earnings](#).” Washington, DC: Urban Institute.
- Delisle, Jason D., and Jason Cohn. 2024. “[Who Benefits from the SAVE Plan’s Student Loan Interest Waiver?](#)” Washington, DC: Urban Institute.
- Matsudaira, Jordan, and Lesley J. Turner. 2020. [Towards a Framework for Accountability for Federal Financial Assistance Programs in Postsecondary Education](#). Washington, DC: Brookings Institution.
- US Department of Education. 2024. “[Technical Documentation: College Scorecard Data by Field of Study](#).” Washington, DC: US Department of Education.

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## Acknowledgments

This brief was funded by an anonymous funder. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission.

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